



Initial Alternatives Report, Appendix B Development of Preliminary Alternatives

Final Version, March 2005

SRWRS Partners



SACRAMENTO RIVER WATER RELIABILITY STUDY

Initial Alternatives Report, Appendix B: Development of Preliminary Alternatives

TABLE OF CONTENTS

TABLE OF CONTENTS	B-I
LIST OF TABLES.....	B-II
LIST OF FIGURES.....	B-II
INTRODUCTION	B-1
PLANNING OBJECTIVES	B-3
PLANNING CONSTRAINTS AND CRITERIA	B-3
<i>Planning Constraints.....</i>	<i>B-3</i>
Water Delivery Quantities	B-3
Laws, Regulations, Policies, and Agreements	B-4
<i>Planning Constraints.....</i>	<i>B-5</i>
ALTERNATE SOURCE MEASURES DEVELOPMENT	B-5
CATEGORY 1: MEASURES FOR WATER CONSERVATION.....	B-5
CATEGORY 2: MEASURES FOR RECYCLED WATER USE	B-6
CATEGORY 3: MEASURES FOR GROUNDWATER USE.....	B-6
CATEGORY 4: MEASURES FOR ADDITIONAL SURFACE WATER DIVERSION.....	B-7
INITIAL ASSESSMENTS OF DIVERSION MEASURES FOR INSTITUTIONAL REQUIREMENTS AND PROJECT CONSTRUCTIBILITY	B-9
SCOPE OF THE INITIAL ASSESSMENTS.....	B-9
1. FEATHER RIVER NEAR NICOLAUS	B-9
2. FEATHER RIVER FROM NICOLAUS TO CONFLUENCE WITH SACRAMENTO RIVER.....	B-10
3. SANKEY DIVERSION	B-10
4. ELKHORN DIVERSION.....	B-11
5. SACRAMENTO RIVER FROM FEATHER RIVER CONFLUENCE TO AMERICAN RIVER CONFLUENCE.....	B-12
6. SACRAMENTO RIVER WTP.....	B-13
7. FREEPORT DIVERSION	B-14
8. SACRAMENTO RIVER FROM AMERICAN RIVER CONFLUENCE TO FREEPORT	B-14
9. FAIRBAIRN WTP	B-14
10. AMERICAN RIVER FROM NIMBUS DAM TO CONFLUENCE WITH SACRAMENTO RIVER	B-15
11. FOLSOM DAM	B-15
12. ARPS	B-16
SUMMARY	B-17
IDENTIFIED PRELIMINARY ACTION ALTERNATIVES	B-19
FEATHER RIVER DIVERSION ALTERNATIVE	B-19
SANKEY DIVERSION ALTERNATIVE.....	B-19
ELKHORN/ELVERTA DIVERSION ALTERNATIVE	B-19
FOLSOM DAM ALTERNATIVE	B-19
ARPS ALTERNATIVE	B-19

ATTACHMENT A: SUMMARY OF WATER CONSERVATION ELEMENTS OF THE WATER FORUM AGREEMENT

List of Tables

TABLE B-1. WATER DELIVERY QUANTITIES CONSIDERED IN THE SRWRSE~~ERROR! BOOKMARK NOT DEFINED.~~~~ERROR!~~
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TABLE B-2. SCREENING OF PRELIMINARY ALTERNATE SOURCE MEASURES SUMMARIZED BY
SRWRS COST-SHARING PARTNER B-18

TABLE B-3. PRELIMINARY STUDY ALTERNATIVES B-20

List of Figures

FIGURE B-1. CONCEPTUAL REPRESENTATION OF PRELIMINARY ALTERNATIVES DEVELOPMENT PROCESS..... B-2

FIGURE B-2. POTENTIAL DIVERSION LOCATIONS B-8

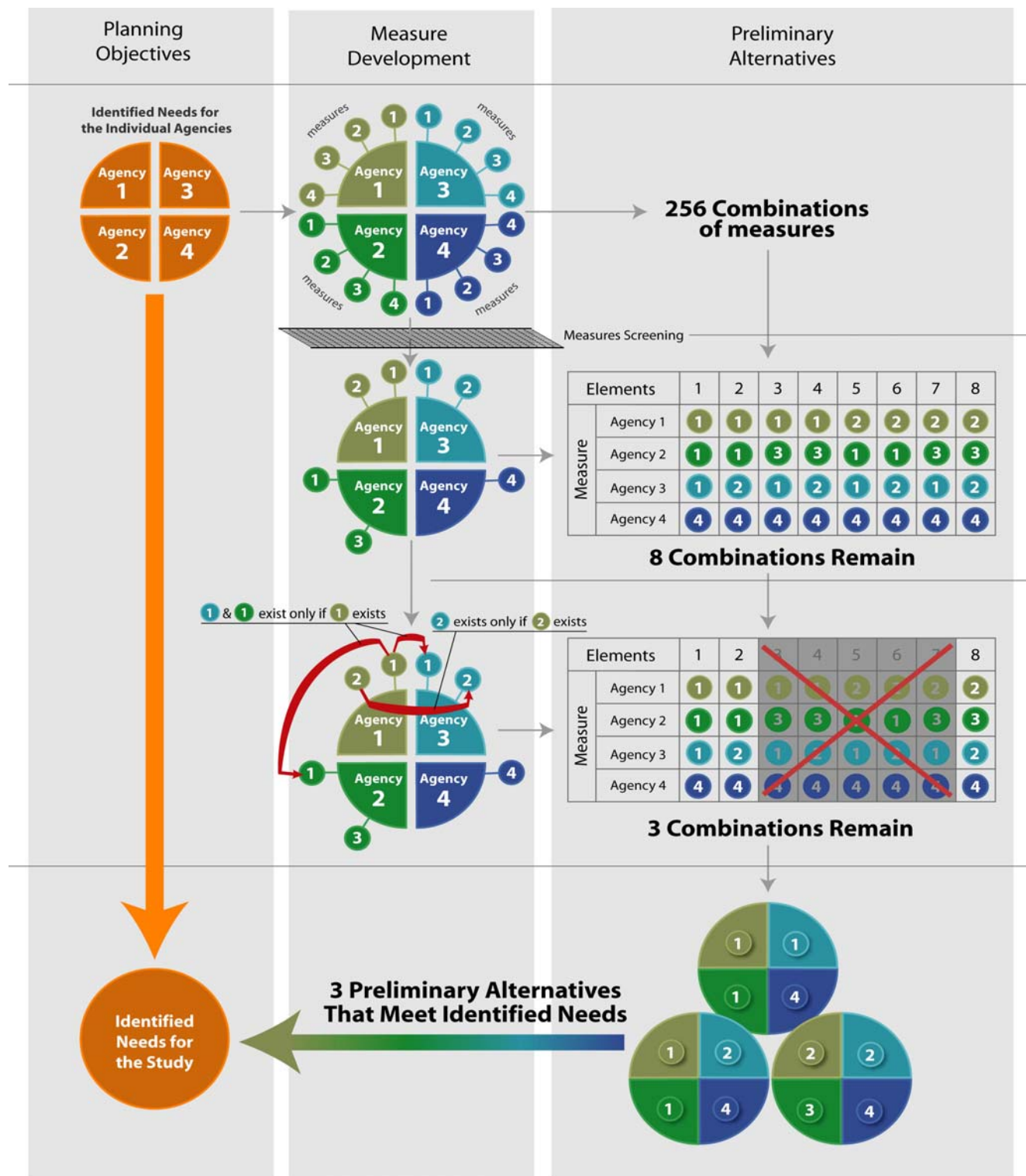
INTRODUCTION

The process of developing preliminary action alternatives to meet the identified needs for the Sacramento River Water Reliability Study (SRWRS) cost-sharing partners includes the following:

1. Identification of each SRWRS cost-sharing partner's 2030 water supply needs. (This effort is summarized in the main report and documented in **Appendix A: Assessment of Water Supply Needs**).
2. Formulation of preliminary alternate source measures for each SRWRS cost-sharing partner's identified 2030 water supply needs, resulting in many potential measure combinations. (This effort is summarized in the main report and documented in this appendix).
3. Screening of the preliminary alternate source measures for each SRWRS cost-sharing partner, considering institutional and constructibility (implementability) issues. This effort results in fewer potential measure combinations. (This effort is summarized in the main report and documented in this appendix).
4. Combination of the remaining viable measures for each SRWRS cost-sharing partner into preliminary alternatives for scoping purposes. Each preliminary alternative represents a collection of implementable measures that meet the identified needs of all SRWRS cost-sharing partners. A No-Project/No-Action Alternative (Future Without Project Conditions¹) is also presented. In many instances, inclusion of a given measure for one SRWRS cost-sharing partner depends on the inclusion of a given measure for another partner (e.g., the City of Roseville (Roseville) and Sacramento Suburban Water District (SSWD) would not participate in a Sacramento River diversion absent Placer County Water Agency (PCWA)). (This effort is summarized in the main report and documented in this appendix).

Figure B-1 shows a conceptual representation of the above process. The resulting measures and preliminary action alternatives will be refined as the SRWRS progresses, and the descriptions and schematic representations will be subject to change. The resulting preliminary alternatives will also be screened and modified based on engineering and environmental considerations and public scoping comments. These efforts are summarized in the main report and documented in **Appendix C: Phase I Engineering Report**, **Appendix D: Phase I Environmental Evaluation**, and **Appendix E: Scoping Report**, respectively. This March 2005 version reflects enhancements of the May 2004 version in measure development, and maintains consistency with the water supply needs documented in **Appendix A**.

¹ The Future Without Project Conditions defined in **Chapter 4** of the main report are currently used for planning purposes at this stage of study development to assess the water supply options of each cost-sharing partner. NEPA and CEQA require that the significance of the effects of proposed projects and alternatives be determined through comparing those with baseline conditions for the future and existing conditions. These baselines for comparison will be further defined through Phase II EIS/EIR development.



* Assuming each agency has four options to satisfy its individual needs.

Figure B-1. Conceptual Representation of Preliminary Alternatives Development Process

PLANNING OBJECTIVES

To address the identified water supply reliability problem and satisfy the study authorizing legislation, the following planning objectives for the SRWRS were identified:

- Provide additional water supply to PCWA to meet water demands resulting from planned urban growth
- Provide additional water supply to SSWD to enhance the Groundwater Stabilization Project
- Provide additional water supply to Roseville to meet water demands resulting from planned urban growth and to facilitate a local conjunctive use program
- Provide additional water supply capacity for Sacramento to ensure water supply reliability and to provide retail and wholesale services within Sacramento's POU, and wheeling services to neighboring water purveyors to meet water demands and reduce groundwater reliance
- Maximize long-term water supply reliability in the Placer-Sacramento region through increased system interconnectivity, and source redundancy through conjunctive use of groundwater and cost-sharing partners' existing surface water rights and contract entitlements

These objectives were used for formulating alternatives and when considering the planning constraints and criteria discussed below.

PLANNING CONSTRAINTS AND CRITERIA

Planning constraints and criteria used to guide the SRWRS are described in this section.

Planning Constraints

Planning constraints primarily consist of existing Federal, State, and local laws, regulations, policies, and agreements, as highlighted below. Constraints related to water delivery quantities considered in the SRWRS are discussed first and separately due to their prevailing significance for formulating alternatives.

Water Delivery Quantities

For the SRWRS, the cost-sharing partners will consider only alternatives that use **existing** water rights and contract entitlements. **Table B-1** summarizes requests for additional surface water diversions and treatment capacities necessary to balance projected 2030 demand and supply and to enhance water supply reliability.

Table B-1. Water Delivery Quantities Considered in the SRWRS

Water Purveyor	Maximum Additional Annual Water Deliveries (AF)	Source	Type of Use	Additional Treatment Capacities (mgd)	Purpose of Additional Treatment Capacities
PCWA	35,000	CVP	M&I	65	Max-day demand
SSWD	29,000 ^[1]	MFP	M&I	15	Reliability and redundancy
Roseville	7,100 ^[2]	MFP	M&I	10	Max-day demand
Sacramento	17,000 ^[3]	Water rights, water wheeling requests	M&I	145	Max-day demand
Total	88,100			235	

^[1] For Water Forum average, drier, and driest years only; the WFA allows SSWD to exercise this entitlement in Water Forum wet years using diversions from the American River.

^[2] Roseville would only consider additional diversions from a river other than the American River.

^[3] The WFA does not establish a volumetric limitation for Sacramento's total diversion; the estimated additional water supply to meet its projected demand is about 17,000 AF per year, based on the difference between projected demand and the simulated average diversion for Sacramento that could be realized using then-existing diversion facilities on the American and Sacramento rivers. However, Sacramento could divert up to 81,800 AF per year under its water rights on the Sacramento River at a new diversion by reducing the diversion under its Sacramento River water rights at its existing Sacramento River WTP downstream of the confluence with the American River.

Laws, Regulations, Policies, and Agreements

Development of the SRWRS will be consistent with the following Federal, State, and local laws, regulations, policies, and agreements that govern the operation of statewide and local water supply systems:

- Satisfying requirements stipulated in PL 106-554 (the Congressional authorizing legislation for the SRWRS) to complete a feasibility study for a Sacramento River diversion that is consistent with the WFA and includes the following components: (1) development of a range of reasonable options, (2) an environmental evaluation, and (3) consultation with Federal and State resource management agencies regarding potential impacts and mitigation measures. Furthermore, Congress requires the SRWRS to be developed in coordination with the CALFED Program.
- For Roseville and SSWD, considering a diversion location from other than the American River only when a concurrent consideration of PCWA's CVP delivery exists. That is, Roseville and SSWD are not considering developing a diversion location on rivers other than the American River without PCWA.
- Observing other existing applicable laws, regulations, water rights, contracts and agreements, including, but not limited to, the following:
 - California laws, particularly Water Codes, and obligations of the cost-sharing partners in their charters and as defined in California laws
 - CVPIA, especially the dedication of (b)(2) water from CVP contract entitlements
 - SWRCB D-1641 and the WQCP
 - Existing water rights, local water contracts and/or agreements, and CVP/SWP water service contracts
 - NEPA, CEQA, and ESA, including BOs for the Sacramento River, American River, and Delta related to operations of the CVP, SWP, and local projects

Planning Constraints

Planning constraints primarily consist of existing federal, state, and local laws, regulations, policies, and agreements, as highlighted below. A detailed list of these documents is provided in **Chapter 5** of the main report; in particular, the planning constraints that govern each SRWRS cost-sharing partner are detailed in **Appendix A: Assessment of Water Supply Needs**. Constraints related to water delivery quantities considered in the SRWRS are discussed first and separately due to their prevailing significance in alternative formulation.

- In this study, the SRWRS cost-sharing partners are considering only alternatives using **existing** water rights and contract entitlements. **Table B-1** shows the maximum quantity of additional water delivery requested by each agency and the source (contract or water right) of the water to meet that request.
- Roseville and SSWD are considering a diversion location on other than the American River only when a concurrent consideration of PCWA's Central Valley Project (CVP) delivery exists. That is, Roseville and SSWD are not considering developing a diversion location on rivers other than the American River without PCWA.
- Development of the SRWRS is consistent with federal, state, and local laws, regulations, policies, and agreements that govern the operation of statewide and local water supply systems.

ALTERNATE SOURCE MEASURES DEVELOPMENT

To ensure the completeness of alternatives considered in the SRWRS, measures were developed to address identified water supply reliability gaps under the planning objectives, criteria, and constraints. Measures are partial solutions for the identified SRWRS planning objectives.

CATEGORY 1: MEASURES FOR SURFACE STORAGE

Surface storage measures would increase water supply availability to allow allocation of additional water rights and contract entitlements, and modify the timing of water supply availability. However, surface storage measures were eliminated from consideration in the SRWRS because they did not address the identified water supply reliability problem, even though they could improve overall efficiency and water supply shortages in statewide water management.

This finding is consistent with the conclusions of Reclamation's American River Water Resources Investigation (ARWRI), stating that the Placer-Sacramento region has sufficient water rights and contract entitlements for planned development. Therefore, conjunctive management, discussed below, could be a more environmentally friendly alternative for water supply reliability. The resulting WFA is a programmatic approach that demonstrates the feasibility of the concept of conjunctive management.

CATEGORY 2: MEASURES FOR WATER CONSERVATION

SRWRS development tiers from the programmatic WFA. The WFA was developed through collaboration of a diverse group of business and agricultural leaders, citizens groups, environmentalists, water managers, and local governments in Sacramento County and neighboring areas. The resulting WFA is consistent with the California Federal Bay-Delta Program (CALFED) objectives of developing a locally initiated, regionally based approach for enhancing water supply reliability and protecting the watersheds and ecosystem.

Through preparation of a programmatic Environmental Impact Report (EIR), the WFA represents a locally initiated, regional solution to developing a strategic plan to (1) provide a reliable and safe water supply for the region's economic health and planned development to 2030, and (2) preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River. Potential impacts of actions supporting the planned development, including a Sacramento River diversion, were mitigated on a programmatic level by the seven integrated actions (or elements) of the WFA.²

The SRWRS is being developed under WFA Element I (Increased Surface Water Diversions) and thus, no additional water conservation measures are being developed beyond the programs and actions stipulated in Element V (Water Conservation). **Attachment A** of this appendix summarizes the water conservation measures of the WFA, the PSA of each SRWRS cost-sharing partner, and corresponding conservation actions taken to date. The expected conservation has been factored into the assessment of water supply needs documented in **Appendix A: Assessment of Water Supply Needs**.

CATEGORY 3: MEASURES FOR RECYCLED WATER USE

The WFA does not include specific mandates regarding use of recycled water. The planned use of recycled water by PCWA and Roseville was detailed in **Appendix A: Assessment of Water Supply Needs** as an alternate source of water supply. SSWD and Sacramento have not adopted a policy regarding use of recycled water. Thus, no additional measures for recycled water use would be developed for the SRWRS.

CATEGORY 4: MEASURES FOR GROUNDWATER USE

Groundwater supply is available in the Placer-Sacramento region, and continues to be a critical component of local water supply for agricultural and M&I uses. All SRWRS cost-sharing partners have access to groundwater, which is the main water source for SSWD and a supplemental water source for PCWA, Roseville, and Sacramento.

However, groundwater measures were removed from further consideration in the SRWRS because they are inconsistent with the identified planning objectives. As previously mentioned, the SRWRS is being developed under WFA Elements I and II with planning objectives to further increase use of the cost-sharing partners' surface water rights and contract entitlements to enhance the regional conjunctive use and groundwater management envisioned by the WFA for long-term water supply reliability.

Additional use of groundwater also could compromise the management goals of safe yield established in the WFA. Particularly, with the threat of uncontrolled Aerojet contamination, the region is seeking greater collaboration in diversifying water sources to ensure water supply reliability. Additional use of groundwater is not consistent with the direction of regional planning.

Other partner-specific reasons exist for removing groundwater measures from further consideration. For PCWA, using groundwater for new urban development in unincorporated Placer County areas is not consistent with the Placer County General Plan. Thus, PCWA has limited its groundwater use and is not seeking groundwater options in the SRWRS. The only opportunity for groundwater use in PCWA's service area is for the incorporated City of Lincoln (Lincoln). However, Lincoln is located near the edge of the Placer-Sutter groundwater basin, where groundwater development may be limited, and because of hydrogeological connectivity, Lincoln's groundwater supply reliability would be subject and sensitive to groundwater

² The seven elements of the WFA include Element I: Increased Surface Water Diversions; Element II: Actions to Meet Customers' Needs While Reducing Diversion Impacts on the Lower American River in Drier Years; Element III: Support for an Improved Pattern of Fishery Flow Releases from Folsom Reservoir; Element IV: Lower American River Habitat Management Element; Element V: Water Conservation; Element VI: Groundwater Management Element; and Element VII: Water Forum Successor Effort.

management of the basin in the County of Sacramento. Therefore, despite groundwater availability, long-term water supply reliability for Lincoln would still require a successful conjunctive use program on a Placer-Sacramento regional scale.

For SSWD, increasing use of groundwater is reverting to its current conditions and thus, this measure would address the water supply reliability problem.

For Roseville, and Sacramento, increasing groundwater use for unmet demand is a feasible option for water supply; however, it would be inconsistent with their long-term policy for reducing groundwater reliance.

CATEGORY 5: MEASURES FOR ADDITIONAL SURFACE WATER DIVERSION

As previously mentioned, the SRWRS is being developed under WFA Element I. Due to the different water rights and contract entitlements, location measures are best developed in a comprehensive and purveyor-specific manner. Considering available surface water sources around the study area, potential sources of surface water include the American, Feather, and Sacramento rivers. Although the Bear River forms the northern boundary of the study area (see **Figure B-2**), it is not considered as a potential diversion location in the SRWRS because it is a tributary of the Feather River and carries significantly less flow. The identified 12 potential diversion locations or river reaches include the following:

1. Feather River near Nicolaus
2. Feather River from Nicolaus to the confluence with the Sacramento River
3. Sankey Diversion
4. Elkhorn Diversion
5. Sacramento River from Feather River confluence to American River confluence
6. Sacramento River Water Treatment Plant (WTP)
7. Freeport Diversion
8. Sacramento River from American River confluence to Freeport
9. Fairbairn WTP
10. American River from Nimbus Dam to Sacramento River confluence
11. Folsom Dam
12. American River Pump Station (ARPS)

These 12 potential diversion locations are presented in **Figure B-2**. The partnership of the Bureau of Reclamation (Reclamation) and the SRWRS cost-sharing partners broadens the range of diversion point options.

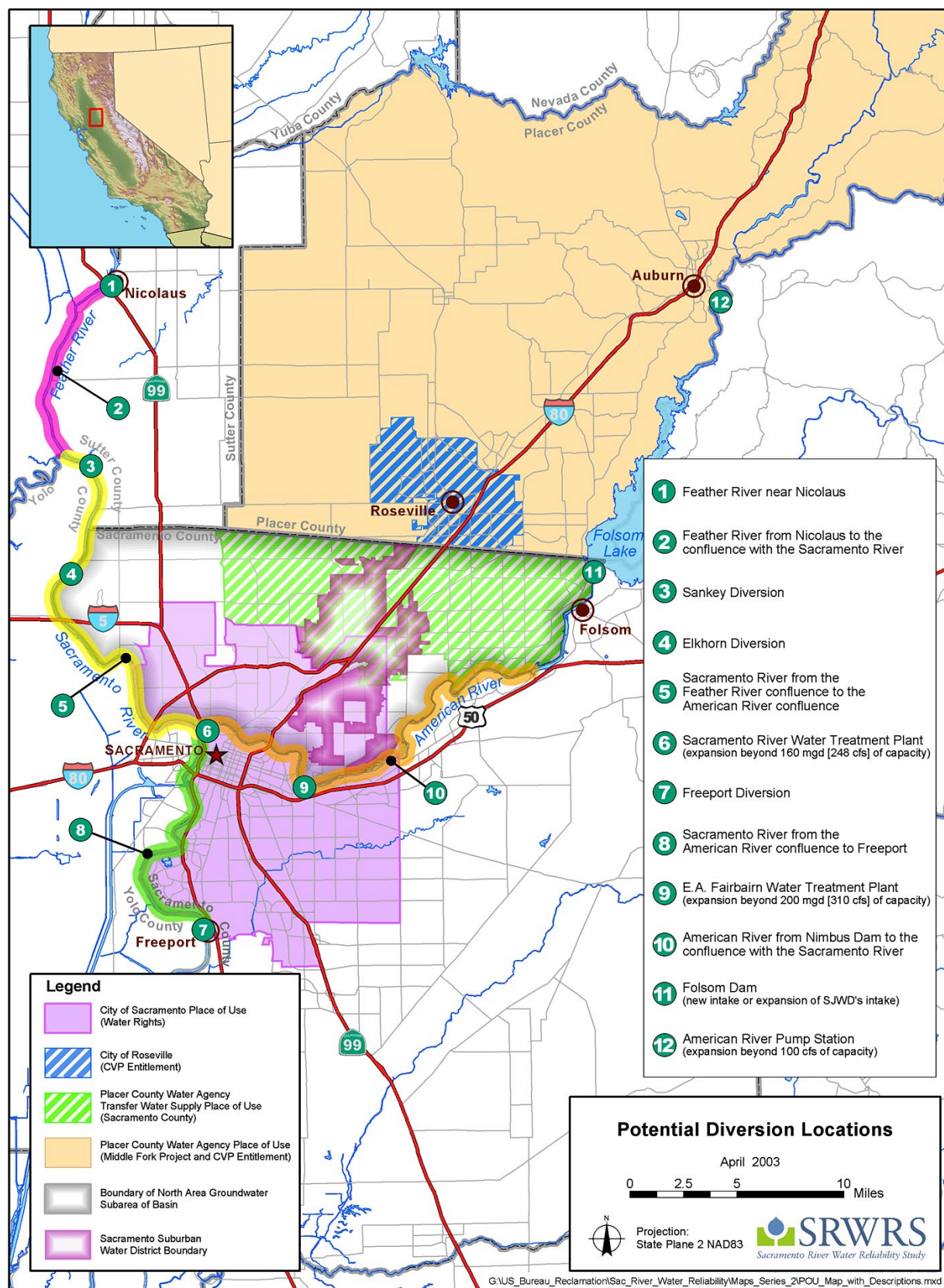


Figure B-2. Potential Diversion Locations for Cost-Sharing Partners

INITIAL ASSESSMENTS OF ADDITIONAL SURFACE WATER DIVERSION MEASURES

This section includes descriptions of the diversion measures (or potential diversion locations), and corresponding initial assessments based on institutional requirements and project constructibility.

SCOPE OF THE INITIAL ASSESSMENTS

The discussion of institutional requirements focuses on necessary contractual changes and water right amendments associated with implementing a diversion. The discussion of project constructibility focuses only on the major implementation issues identified in previous studies, *if any*, as a guideline for comparing diversion locations.

1. FEATHER RIVER NEAR NICOLAUS

A Feather River Diversion was previously identified and evaluated as one of the “Common Elements” in the ARWRI, while considering an opportunity to partner with the California Department of Water Resources (DWR) for agricultural deliveries (using a combination of canals and pipes) and a regional conjunctive use program.

The diversion location near Nicolaus is in Sutter County and is based on available bathymetric information developed by the Sacramento-San Joaquin Rivers Comprehensive Study (Comprehensive Study). This location is barely outside backwater effects caused by the Sacramento River during flooding conditions. There are no existing major water supply diversion, treatment, or conveyance facilities nearby.

Currently, neither the SRWRS cost-sharing partners nor the CVP has water rights or contract entitlements on the Feather River. Therefore, implementation of this diversion measure requires a further exchange with the State Water Project (SWP), the major water rights holder on the Feather River. This exchange can be facilitated by modifying the Coordinated Operations Agreement (COA)³ between the CVP and SWP.

Initial institutional requirements and project constructibility associated with each SRWRS cost-sharing partner are summarized as follows:

- **PCWA’s CVP Delivery** — Reclamation must approve a change in points of delivery for PCWA’s CVP contract, and a further exchange agreement with the SWP is required.
- **SSWD’s MFP Delivery** — Reclamation must approve an exchange agreement with PCWA to exchange PCWA’s MFP delivery to Folsom Lake for a CVP delivery from the Sacramento River. However, the Feather River diversion location requires that Reclamation secure an additional exchange agreement with the SWP.
- **Roseville’s MFP Delivery** — Same as SSWD’s MFP Delivery.
- **Sacramento’s Water Rights Diversion** — An exchange of Sacramento’s water rights on the Sacramento River with the SWP delivery is required.

³ The COA was signed by Reclamation and DWR in November 1986. It is both an operations agreement and a water rights settlement. Its purpose is to assure that each project (i.e., CVP and SWP) obtains its share of water from the Sacramento-San Joaquin River Delta (Delta) and bears its share of obligations to protect the other beneficial uses of water in the Delta and Sacramento Valley. Coordination between the two projects is facilitated by implementing an accounting procedure based on the sharing principles outlined in the COA.

Initial Assessments: This diversion is located on a river where neither the CVP nor the SRWRS cost-sharing partners have water rights or contract entitlements, and thus implementation of this diversion measure requires further exchanges with the SWP.

- This measure is retained for PCWA, SSWD, and Roseville because these three SRWRS cost-sharing partners do not have water rights or contract entitlements on rivers other than the American River, and modification of the COA, although involved and potentially time-consuming, is possible.
- This measure is **NOT** retained for Sacramento because Sacramento has water rights on the Sacramento River where flow is greater and requires no involvement of the SWP. There are no clear engineering or environmental benefits to justify the additional cost and institutional issues that may be associated with this location measure.

2. FEATHER RIVER FROM NICOLAUS TO CONFLUENCE WITH SACRAMENTO RIVER

This diversion location represents a reach of the Feather River downstream from Nicolaus to the confluence with the Sacramento River. Similar to Measure No. 1, this river reach is in Sutter County, and neither the SRWRS cost-sharing partners nor the CVP has water rights or contract entitlements on the Feather River. Therefore, implementation of this diversion measure requires a further exchange with the SWP, the major water rights holder on the Feather River.

Based on available bathymetric information, this reach of the Feather River is less desirable than the Measure No. 1 diversion, resulting in greater risks of sedimentation and safety, especially flooding. Significant backwater effects are evident during historical flooding conditions and studies conducted during the Comprehensive Study. Any diversion in this reach is subject to significant considerations of sedimentation and safety.

Initial Assessments: This diversion is located on a river where neither the CVP nor the SRWRS cost-sharing partners has water rights or contract entitlements and thus, implementation of this diversion measure requires further exchanges with the SWP. This measure is **NOT** retained for any SRWRS cost-sharing partner because it has additional disadvantages compared with Measure No. 1, while providing no additional advantages.

3. SANKEY DIVERSION

The Sankey Diversion is located on the Sacramento River in Sutter County, near the confluence with the Natomas Cross Canal (NCC). It is one of two consolidated diversions recommended in Natomas Mutual Water Company's (NMWC's) American Basin Fish Screen and Habitat Improvement Project (ABFSHIP). NMWC's planned capacity at the Sankey Diversion site is 420 cubic feet per second (cfs). Currently, NMWC is preparing environmental documentation for this project.

This stretch of the Sacramento River has good depth and flow and no major water supply diversion, treatment, or conveyance facilities exist nearby. There is a lower probability of flood damage due to Sacramento weir operations. Currently, PCWA, SSWD, and Roseville do not have water rights or contract entitlements on the Sacramento River; however, the CVP does. Sacramento has water rights on the Sacramento River, but the Sankey Diversion is not an authorized point of diversion.

Initial institutional requirements and project constructibility associated with each SRWRS cost-sharing partner are summarized as follows:

- **PCWA's CVP Delivery** — Reclamation must approve a change in points of delivery for PCWA's CVP contract. Additional coordination with NMWC's ABFSHIP is required.

- **SSWD's MFP Delivery** — Reclamation must approve an exchange agreement with PCWA to exchange PCWA's MFP delivery to Folsom Lake for a CVP delivery from the Sacramento River. Additional coordination with ABFSHIP is required.
- **Roseville's MFP Delivery** — Same as SSWD's MFP Delivery.
- **Sacramento's Water Rights Diversion** — State Water Resources Control Board (SWRCB) approval is required to add the Sankey Diversion as one of the authorized points of diversion for Sacramento's water rights on the Sacramento River. Additional coordination with ABFSHIP is required.

Initial Assessments: This diversion is located on a river where CVP and Sacramento have water rights or contract entitlements. Additional institutional requirements are expected for this location measure because (1) it is outside the SRWRS cost-sharing partners' jurisdictions, and (2) it requires coordination with NMWC's ABFSHIP implementation.

- This measure is retained for PCWA, SSWD, and Roseville because these three SRWRS cost-sharing partners do not have water rights or contract entitlements on rivers other than the American River. Their diversions from this location require Reclamation's approval. NMWC is a CVP contractor and Reclamation supports the development and implementation of ABFSHIP.
- This measure is **NOT** retained for Sacramento. It has additional disadvantages to Sacramento compared with Measures No. 4 and No. 5 (described later) but no clear benefit to justify the potential additional cost and institutional issues.

4. ELKHORN DIVERSION

The Elkhorn Diversion is located on the Sacramento River in Sacramento County, downstream of Measure No. 3 and south of Elverta Road. It is one of two consolidated diversions recommended in NMWC's ABFSHIP. NMWC's planned capacity at the Elkhorn Diversion site is 210 cfs. Currently, NMWC is preparing environmental documentation for ABFSHIP.

The Elkhorn Diversion is an existing diversion for agricultural purposes. This stretch of the Sacramento River has good depth and flow, and a lower probability of flood damage due to Sacramento weir operations. Currently, PCWA, SSWD, and Roseville do not have water rights or contract entitlements on the Sacramento River; however, the CVP does. Sacramento has water rights on the Sacramento River, but the Elkhorn Diversion is not an authorized point of diversion.

Initial institutional requirements and project constructibility associated with each SRWRS cost-sharing partner are summarized as follows:

- **PCWA's CVP Delivery** — Reclamation must approve a change in points of delivery for PCWA's CVP contract. Additional coordination with ABFSHIP is required.
- **SSWD's MFP Delivery** — Reclamation must approve an exchange agreement with PCWA to exchange PCWA's MFP delivery to Folsom Lake for a CVP delivery from the Sacramento River. Additional coordination with ABFSHIP is required.
- **Roseville's MFP Delivery** — Same as SSWD's MFP Delivery.

- **Sacramento's Water Rights Diversion** —SWRCB approval is required to add the Elkhorn Diversion as one of the authorized points of diversion for Sacramento's water rights on the Sacramento River. Additional coordination with ABFSHIP is required.

Initial Assessments: This diversion is located on a river where the CVP and Sacramento have water rights or contract entitlements. Additional institutional requirements are expected because this measure requires coordination with ABFSHIP.

- This measure is retained for PCWA, SSWD, and Roseville because these three SRWRS cost-sharing partners do not have water rights or contract entitlements on rivers other than the American River. Their diversions from this location require Reclamation's approval. NMWC is a CVP contractor and Reclamation supports the development and implementation of ABFSHIP.
- This measure is retained for Sacramento because it has water rights on the Sacramento River. The measure is within Sacramento County, thus reducing potential institutional issues as compared to Measure No. 3.

5. SACRAMENTO RIVER FROM FEATHER RIVER CONFLUENCE TO AMERICAN RIVER CONFLUENCE

This measure considers a diversion in a stretch of the Sacramento River in Sutter and Sacramento counties, but not at either the Sankey or Elkhorn diversions. This stretch of the Sacramento River has good depth and flow, and the probability of flood damage is lower due to Sacramento weir operations. No major water supply diversion, treatment, or conveyance facilities exist nearby. Based on review of the bathymetric information developed in the Comprehensive Study, a site was identified on the Sacramento River near Elverta Road (approximately 1.5 miles north of the existing Elkhorn Diversion) that has potentially more river depth than the Elkhorn Diversion.

Currently, PCWA, SSWD, and Roseville do not have water rights or contract entitlements on the Sacramento River; however, the CVP does. Sacramento has water rights on the Sacramento River, but the Sankey Diversion is not an authorized point of diversion.

Initial institutional requirements and project constructibility associated with each SRWRS cost-sharing partner are summarized as follows:

- **PCWA's CVP Delivery** — Reclamation must approve a change in points of delivery for PCWA's CVP contract.
- **SSWD's MFP Delivery** — Reclamation must approve an exchange agreement with PCWA to exchange PCWA's MFP delivery to Folsom Lake for a CVP delivery from the Sacramento River.
- **Roseville's MFP Delivery** — Same as SSWD's MFP delivery.
- **Sacramento's Water Rights Diversion** — SWRCB approval is required to add the Elverta Diversion as one of the authorized points of diversion for Sacramento's water rights on the Sacramento River.

Initial Assessments: This diversion is located on a river where the CVP and Sacramento have water rights or contract entitlements. Although this location is not one of NMWC's two consolidated diversions, coordination with ABFSHIP implementation is required for planning purposes.

- This measure is retained for PCWA, SSWD, and Roseville because these three SRWRS cost-sharing partners do not have water rights or contract entitlements on rivers other than the American River.

Their diversions from this location require Reclamation's approval. NMWC is a CVP contractor and Reclamation is currently participating in the development and implementation of ABFSHIP for its environmental restoration benefits.

- This measure is retained for Sacramento because it has water rights on the Sacramento River. The measure is within Sacramento County, thus reducing potential institutional issues as compared to Measure No. 3.

6. SACRAMENTO RIVER WTP

The Sacramento River WTP is located on the Sacramento River in Sacramento County, downstream from the confluence of the Sacramento and American rivers. The Sacramento River WTP is an authorized diversion point for Sacramento's water rights on both the Sacramento and American rivers. Sacramento is currently expanding the WTP capacity to 160 million gallons per day (mgd) (248 cfs), and expects construction to be complete in 2004.

An expansion beyond that currently underway is required to accommodate diversions considered in the SRWRS. As evaluated in Sacramento's Water Facilities Expansion Project EIR (November 2000), such an expansion requires constructing a new clearwell and acquiring adjoining property in the Sacramento downtown area. A retrofit of a portion of Sacramento's existing transmission system through established residential, commercial, and recreational areas also may be required.

Initial institutional requirements and project constructibility associated with each SRWRS cost-sharing partner are summarized as follows:

- **PCWA's CVP Delivery** — Reclamation must approve the change in points of delivery for PCWA's CVP contract. PCWA's service area is north of the American River and thus, a major transmission pipeline across the river is required, and significant lift requirements exist.
- **SSWD's MFP Delivery** — Reclamation must approve an exchange agreement with PCWA to exchange PCWA's MFP delivery to Folsom Lake for a CVP delivery from the Sacramento River. Alternatively, this delivery can be facilitated if the SWRCB approves the addition of the Sacramento River WTP as a point of diversion for the MFP. SSWD's service area is north of the American River and thus, a major transmission pipeline across the river is required, and significant lift requirements exist.
- **Roseville's MFP Delivery** — Same as SSWD's MFP Delivery.
- **Sacramento's Water Rights Diversion** — The Sacramento River WTP is an authorized diversion point for Sacramento for its water rights on both the Sacramento and American rivers and thus, no additional SRWCB approval is required. However, Sacramento evaluated expansion of the Sacramento River WTP beyond 160 mgd in a previous effort and considered it undesirable.

Initial Assessments: This measure is **NOT** retained for any SRWRS cost-sharing partner because most of the cost-sharing partners' service areas are located north of the American River, requiring a major transmission line across the American River and significant lift requirements. Compared with Measures No. 3, No. 4, and No. 5, significant disadvantages include (1) the cost associated with another WTP expansion (i.e., beyond 160 mgd) in a heavily urbanized area, and (2) the potential disturbance of established neighborhoods for retrofitting a portion of the existing transmission system.

7. FREEPORT DIVERSION

Freeport is located at the south end of Sacramento's American River water rights POU and is an authorized diversion point for Sacramento. This location was an alternative considered but not pursued in Sacramento's Water Facilities Expansion Project EIR (2000) due to its southerly location and costs that exceeded those of a Measure No. 6 location.

In December 2000, East Bay Municipal Utility District (EBMUD) and Reclamation completed a joint abbreviated EIR/Environmental Impact Statement (EIS) on EBMUD's proposed Supplemental Water Supply Project and possible water service contract amendment for water from CVP's American River Division. The amendatory contract allows for diversions of EBMUD's contractual supply, under conditions identified in the EIS/EIR, from either the lower American River at "Site 5" or the Sacramento River at Freeport. In February 2002, the Sacramento County Water Agency (SCWA) and EBMUD formed a joint power authority, the Freeport Regional Water Authority (FRWA), to guide the development and operation of the Freeport Regional Diversion Project. Sacramento is an associated member of FRWA. In 2004, Reclamation and FRWA completed a Final EIS/EIR on the Freeport Regional Diversion Project. Thus, this measure would require coordination with FRWA.

Initial Assessments: This measure is **NOT** retained for any SRWRS cost-sharing partner for similar reasons similar to those described in Measure No. 6.

8. SACRAMENTO RIVER FROM AMERICAN RIVER CONFLUENCE TO FREEPORT

This stretch of the Sacramento River is located in Sacramento County, downstream of the confluence with the American River. This measure is meant to encompass all other potential diversions in this stretch of the Sacramento River (i.e., not the Freeport Diversion or the Sacramento River WTP). A diversion within this stretch of the Sacramento River was one of the alternatives considered but not pursued in EBMUD's 2000 Supplemental Water Supply Project EIS/EIR.

Initial Assessments: This measure is **NOT** retained for any SRWRS cost-sharing partner for similar reasons similar to those described in Measure No. 6.

9. FAIRBAIRN WTP

The Fairbairn WTP is located on the American River in Sacramento County, downstream from Folsom Dam. Sacramento is currently expanding the WTP to 200 mgd (310 cfs) and expects construction to be complete in 2004. This expansion maximizes the use of Sacramento's existing property entitlement at this location. To accommodate the diversions considered in the SRWRS, another expansion of the intake and WTP beyond that currently underway is required. Such an expansion requires major land acquisition in a heavily urbanized area.

Initial Assessments: The Fairbairn WTP is an authorized diversion point for Sacramento's American River water rights. PCWA, SSWD, Roseville, and the CVP have water rights and contract entitlements on the American River, although this location is not a currently authorized point of delivery.

- This measure is **NOT** retained for PCWA or SSWD because the location provides no additional benefits to these two agencies as compared to Measures No. 11 and No. 12, both currently authorized points of delivery.
- This measure is **NOT** retained for Roseville or Sacramento because the inclusion of additional diversions from the American River beyond the stipulated WFA limitations is not consistent with their PSAs.

10. AMERICAN RIVER FROM NIMBUS DAM TO CONFLUENCE WITH SACRAMENTO RIVER

This stretch of the American River is located in Sacramento County, downstream from Folsom Dam. This measure is meant to encompass all other potential diversion locations along the lower American River (i.e., not Fairbairn WTP, ARPS, or Folsom Dam). Potential diversions in this river reach were considered but not pursued in EBMUD's Supplemental Water Supply Project EIS/EIR.⁴

Initial Assessments: This measure's institutional considerations are similar to those of Measure No. 9.

- This measure is **NOT** retained for PCWA or SSWD because this location provides no additional benefits to these two agencies as compared to Measures No. 11 and No. 12, both currently authorized points of delivery.
- This measure is **NOT** retained for Roseville or Sacramento because the inclusion of additional diversions from the American River beyond the stipulated WFA limitations is not consistent with their PSAs.

11. FOLSOM DAM

Folsom Dam is an authorized point of diversion for PCWA's CVP contract entitlement and MFP deliveries to Roseville and SSWD. This location is considered because it is an existing diversion point within the region for three of the SRWRS cost-sharing partners (i.e., PCWA, Roseville, and SSWD).

The Appraisal Study Report⁵ of a redundant M&I outlet at Folsom Dam for Roseville, City of Folsom, and San Juan Water District concluded (1) it is possible to attach a secondary outlet to a power generation penstock,^{6,7} and (2) five conceptual alternatives warranted more detailed evaluation in the feasibility phase.^{8,9}

Initial institutional requirements and project constructibility associated with each SRWRS cost-sharing partner are summarized as follows:

- **PCWA's CVP Delivery** — This location requires no amendment to PCWA's CVP contract. However, increasing PCWA's diversion from the American River requires modifications to its WFA PSA to provide closure on the stipulation regarding pursuit of a Sacramento River diversion.
- **SSWD's MFP Delivery** — This location requires no amendment to SSWD's MFP contract. However, increasing SSWD's diversion from the American River in non-wet years requires (1)

⁴ EBMUD's Amendatory CVP contract allows for diversions, under conditions identified in the EIS/EIR, from either the lower American River at "Site 5" or the Sacramento River at Freeport.

⁵ MWH. 2003. Redundant Water Supply, Folsom Dam, California, Appraisal Study Report. Prepared for United States Army Corps of Engineers, Sacramento District, City of Roseville, City of Folsom, and San Juan Water. January.

⁶ Although water supply objectives can be achieved, additional mitigation cost for potential loss of power generation may be significant.

⁷ There is considerable opposition to the use of the penstock. Other types of diversion are also possible.

⁸ The Appraisal Study Report did not consider water supply reliance. Consideration of water supply reliance would likely result in a different determination of feasibility for both power generation and the pumping plant and require improvements to the pumping plant and Reclamation transmission pipelines to accommodate the additional capacity.

⁹ These five conceptual alternatives include (1) tap into planned new flood control outlet conduit, (2) tap into existing penstock, (3) construct new outlet through south end of gravity dam (multilevel intake and pipe through dam), (4) construct new outlet through south end of gravity dam (multilevel intake, pipe through dam, and pipe to new pump station), and (5) construct new freestanding temperature-controlled intake tower and pumping plant at north abutment with pipeline over dam crest.

modifications to its WFA PSA to provide closure on the stipulation regarding pursuit of a Sacramento River diversion, and (2) SWRCB approval of changes in MFP water rights use in Sacramento County.

- **Roseville's MFP Delivery** — This location requires no amendment to Roseville's MFP contract. However, the additional diversion considered in the SRWRS is inconsistent with Roseville's WFA PSA.
- **Sacramento's Water Rights Diversion** — This location is not an authorized point of diversion for Sacramento's water rights on the American River. The change requires only SWRCB approval. However, the additional diversion considered in the SRWRS is inconsistent with Sacramento's WFA PSA.

Initial Assessments:

- This measure is retained for PCWA and SSWD because the location is a currently authorized point of delivery for their water rights and contract entitlements. A new or expanded intake at Folsom Dam is required.
- This measure is **NOT** retained for Roseville or Sacramento because the inclusion of additional diversions from the American River beyond the stipulated WFA limitations is not consistent with their WFA PSAs.

12. ARPS

ARPS is located upstream from Folsom Dam, in the Auburn Canyon of the North Fork American River. Reclamation and PCWA completed a final EIS/EIR on the ARPS in June 2002, and Reclamation issued a Record of Decision (ROD) for project implementation in September 2002. Construction began in 2003 and is expected to be complete in 2007. The current design of ARPS allows for expansion to a maximum capacity of 225 cfs without further footprint-related impacts to the American River.

ARPS is an authorized point of diversion for PCWA's MFP water but not its CVP supply (the CVP cannot provide reliable water supplies at this location).

Initial institutional requirements and project constructibility associated with each SRWRS cost-sharing partner are summarized as follows:

- **PCWA's CVP Delivery** — Reclamation cannot provide reliable deliveries to PCWA at this location. Therefore, PCWA diverts from its MFP water rights, and its CVP contract entitlements are diverted at Folsom Dam and used by MFP contractors (e.g., SSWD and Roseville). Although no amendment to PCWA's CVP contract or MFP water rights is required, PCWA must amend its water sale contracts with corresponding users at Folsom Dam. In addition, increasing PCWA's American River diversion requires modifications to its WFA PSA to provide closure on the stipulation regarding pursuit of a Sacramento River diversion.
- **SSWD's MFP Delivery** — This location is a currently authorized point of diversion for MFP supplies. Diversion, treatment, and transmission facilities are available. Diversions of 29,000 acre-feet (AF) in non-wet years for use in the MFP extended POU in Sacramento County require additional SWRCB approval.

- **Roseville's MFP Delivery** — This location is a currently authorized point of diversion for MFP supplies. Diversion, treatment, and transmission facilities are available. However, the additional 7,1000 AF per year diversion considered in the SRWRS is not consistent with Roseville's PSA.
- **Sacramento's Water Rights Diversion** — This location is not an authorized point of diversion for Sacramento's American River water rights. Reclamation cannot enter into an exchange agreement for Sacramento at this location, and PCWA's MFP does not have sufficient yield to facilitate the diversion for Sacramento. The additional diversion considered in the SRWRS is also inconsistent with Sacramento's PSA.

Initial Assessments: This measure has similar institutional considerations similar to Measure No. 9.

- This measure is retained for PCWA because the location represents a currently authorized point of delivery for its water rights. Required contractual arrangements are achievable.
- This measure is **NOT** retained for SSWD because the location represents no clear advantage other than being a currently authorized point of delivery for MFP supplies (Measure No. 11).
- This measure is **NOT** retained for Roseville or Sacramento because the inclusion of additional diversions from the American River beyond the stipulated WFA limitations is not consistent with their PSAs.

SUMMARY

As presented in **Table B-2**, several preliminary alternate source measures are not retained for any of the SRWRS cost-sharing partners. These measures include: (2) Feather River from Nicolaus to confluence with Sacramento River; (6) Sacramento River WTP; (7) Freeport Diversion; (8) Sacramento River from American River confluence to Freeport; (9) Fairbairn WTP; and (10) American River from Nimbus Dam to confluence with Sacramento River. These measures are not carried forward into the development of logical, preliminary alternatives in the subsequent section.

Table B-2. Screening of Preliminary Alternate Source Measures Summarized by SRWRS Cost-Sharing Partner

Location Measure	Partner-Specific Assessment of Retention of Measures ^[1]			
	PCWA	SSWD ^[2]	Roseville ^[2]	Sacramento
1. Feather River near Nicolaus	YES	YES	YES	NO
2. Feather River from Nicolaus to Confluence with Sacramento River	NO	NO	NO	NO
3. Sankey Diversion	YES	YES	YES	NO
4. Elkhorn Diversion	YES	YES	YES	YES
5. Sacramento River from Feather River confluence to American River confluence (with identified Elverta Diversion location)	YES	YES	YES	YES
6. Sacramento River WTP	NO	NO	NO	NO
7. Freeport Diversion	NO	NO	NO	NO
8. Sacramento River from American River confluence to Freeport	NO	NO	NO	NO
9. Fairbairn WTP	NO	NO	NO	NO
10. American River from Nimbus Dam to confluence with Sacramento River	NO	NO	NO	NO
11. Folsom Dam	YES	YES	NO	NO
12. ARPS	YES	NO	NO	NO

^[1] The assessments for each cost-sharing partner are mutually independent.

^[2] SSWD and Roseville would not develop a diversion location on rivers other than the American River without PCWA.

Measures retained for at least one of the SRWRS cost-sharing partners include:

1. Feather River near Nicolaus
3. Sankey Diversion (for PCWA, SSWD, and Roseville only)
4. Elkhorn Diversion
5. Sacramento River from Feather River confluence to American River confluence (with identified Elverta Diversion location)
11. Folsom Dam (for PCWA and SSWD only)
12. ARPS (for PCWA only)

These measures are carried forward into the development of preliminary action alternatives for the SRWRS.

Notes on Combining Measures No. 4 and No. 5 for Development of Preliminary Action Alternatives: The distance between the Elkhorn and Elverta diversion locations is less than 2 miles and the institutional considerations are similar. Both measures allow all SRWRS cost-sharing partners to develop a joint diversion and treatment facilities for bridging the identified water supply reliability gaps. To facilitate the preliminary action alternatives discussion and to reduce potential duplication, these two measures are combined and referred to as Elkhorn/Elverta Diversion.

IDENTIFIED PRELIMINARY ACTION ALTERNATIVES

In this section, the retained measures are combined to develop logical, preliminary action alternatives. These preliminary action alternatives are presented in **Table B-3** and described below. Descriptions of diversion specifications, WTP, and transmission pipelines are provided in **Appendix C** of the main report.

FEATHER RIVER DIVERSION ALTERNATIVE

In the Feather River Diversion Alternative, PCWA, SSWD, and Roseville divert up to 71,100 AF of surface water per year from the Feather River near Nicolaus using a 140-cfs diversion facility. They build and operate separate treatment (90-mgd capacity), storage, and conveyance facilities to meet their needs. Sacramento diverts separately from the Sacramento River at the Elkhorn/Elverta site (225-cfs capacity) and constructs its own treatment (145-mgd capacity) and conveyance facilities to serve its needs.

SANKEY DIVERSION ALTERNATIVE

In the Sankey Diversion Alternative, PCWA, SSWD, and Roseville divert up to 71,100 AF of surface water per year from the Sacramento River near the NCC using a 140-cfs diversion facility. They build and operate separate treatment (90-mgd capacity), storage, and conveyance facilities to meet their needs. Sacramento diverts separately from the Sacramento River at the Elkhorn/Elverta site (225-cfs capacity) and constructs its own treatment (145-mgd capacity) and conveyance facilities to serve its needs.

ELKHORN/ELVERTA DIVERSION ALTERNATIVE

In the Elkhorn/Elverta Diversion Alternative, PCWA, SSWD, Roseville, and Sacramento divert surface water per year from the Sacramento River near Elkhorn using a 365-cfs diversion facility. They build and operate treatment (235-mgd capacity), storage, and conveyance facilities to meet their needs. As previously mentioned, this alternative is intended to capture both scenarios in which SRWRS cost-sharing partners develop their own diversion at the Elverta location or co-locate their diversion with NMWC's Elkhorn Diversion.

FOLSOM DAM ALTERNATIVE

In the Folsom Dam Alternative, PCWA and SSWD divert, treat, and convey up to 64,000 AF of surface water per year using the existing or expanded facilities of the San Juan Water District at Folsom Dam. Roseville supplements its existing surface water supplies with groundwater extraction. Sacramento diverts separately from the Sacramento River at the Elkhorn/Elverta site (225-cfs capacity) and constructs its own treatment (145-mgd capacity) and conveyance facilities to serve its needs.

ARPS ALTERNATIVE

In the ARPS Alternative, PCWA builds a 100-cfs expansion of its ARPS near Auburn, diverts an additional 35,000 AF per year, and constructs new treatment (65-mgd capacity) and conveyance facilities to serve its own needs. SSWD diverts, treats, and conveys its surface water supply using the existing facilities of the San Juan Water District at Folsom Dam, and Roseville supplements its existing surface water supplies with groundwater extraction. Sacramento diverts separately from the Sacramento River at the Elkhorn/Elverta site (225-cfs capacity) and constructs its own treatment (145-mgd capacity) and conveyance facilities to serve its needs.

Table B-3. Preliminary Alternatives Considered in the SRWRS for Phase I Evaluation

Alternative	Water Supply Operations			Sacramento
	PCWA	SSWD	Roseville	
Feather River Diversion Alternative	Additional surface water supply: • Diversion of up to 35,000 AF/yr (exchange of CVP water with SWP) • Dedicated capacity to divert and treat up to 65 mgd (100 cfs)	Additional surface water supply: • Diversion of up to 29,000 AF/yr (exchange of MFP water with SWP) • Dedicated capacity to divert and treat up to 15 mgd (25 cfs)	Additional surface water supply: • Diversion of up to 7,100 AF/yr (exchange of MFP water with SWP) • Dedicated capacity to divert and treat up to 10 mgd (15 cfs)	Additional surface water supply at Elkhorn/Elverta Diversion (dedicated capacity to divert and treat up to 145 mgd (225 cfs) from water rights)
Sankey Diversion Alternative	Additional surface water supply: • Diversion of up to 35,000 AF/yr (amend CVP contract) • Dedicated capacity to divert and treat up to 65 mgd (100 cfs)	Additional surface water supply: • Diversion of up to 29,000 AF/yr (exchange of MFP water with CVP) • Dedicated capacity to divert and treat up to 15 mgd (25 cfs)	Additional surface water supply: • Diversion of up to 7,100 AF/yr (exchange of MFP water with CVP) • Dedicated capacity to divert and treat up to 10 mgd (15 cfs)	Additional surface water supply at Elkhorn/Elverta Diversion (dedicated capacity to divert and treat up to 145 mgd (225 cfs) from water rights)
Elkhorn/Elverta Diversion Alternative	Additional surface water supply: • Diversion of up to 35,000 AF/yr (amend CVP contract) • Dedicated capacity to divert and treat up to 65 mgd (100 cfs)	Additional surface water supply: • Diversion of up to 29,000 AF/yr (exchange of MFP water with CVP) • Dedicated capacity to divert and treat up to 15 mgd (25 cfs)	Additional surface water supply: • Diversion of up to 7,100 AF/yr (exchange of MFP water with CVP) • Dedicated capacity to divert and treat up to 10 mgd (15 cfs)	Additional surface water supply: • Dedicated capacity to divert and treat up to 145 mgd (225 cfs) from water rights
American River Pump Station Alternative	Additional surface water supply: • Diversion of up to 35,000 AF/yr (MFP water) • Dedicated capacity to divert and treat up to 65 mgd (100 cfs)	Additional surface water supply: • Diversion of up to 29,000 AF/yr (exchange of MFP water with CVP) • Dedicated capacity to divert and treat up to 15 mgd (25 cfs)	Additional surface water supply: • Diversion of up to 7,100 AF/yr (exchange of MFP water with CVP) • Dedicated capacity to divert and treat up to 10 mgd (15 cfs) Groundwater use	Additional surface water supply at Elkhorn Diversion (dedicated capacity to divert and treat up to 145 mgd (225 cfs) from water rights)
Folsom Dam Alternative	Additional surface water supply: • Diversion of 35,000 AF/yr (CVP water) • Dedicated capacity to divert and treat up to 65 mgd (100 cfs)	Additional surface water supply: • Diversion of up to 29,000 AF/yr (in WFA drier/driest years) • Dedicated capacity to divert & treat up to 15 mgd (25 cfs)	Groundwater use	Additional surface water supply at Elkhorn Diversion (dedicated capacity to divert and treat up to 145 mgd (225 cfs) from water rights)



Appendix B, Attachment A Summary of Water Conservation Elements of the Water Forum Agreement

March 2005

SRWRS Cost-Sharing Partners' Water Forum WCPs and BMPs						
BMP	Title	General Description	Purveyor-Specific Elements of the BMPs			
			PCWA	Sacramento	Roseville	Sac Suburban
--	--	General Notes	PCWA is fully metered and uses volumetric billing. PCWA has a CVP contract entitlement. WCP from January 2000.	Sacramento has a provision in its charter prohibiting mandatory residential meters. Other M&I (non-residential) is subject to a different provision. WCP from January 2000.	Roseville has a CVP contract entitlement and is subject to CVPIA meter retrofit provisions. WCP from January 2000.	As of October 2003, Sac Surburban's WCP remains in draft format.
1	Interior & Exterior Water Audits & Incentive Programs for Single-Family Residential, Multi-Family Residential, and Institutional Customers	Assist residential and institutional customers with water-use reviews (audits) that can include installation of water-saving devices, identification of water-use problems, recommendation of repairs, instruction in landscape principles and seasonal irrigation schedules.	PCWA is fully metered. Incentives to achieve participation goal are not specified.	Sacramento will audit all single- and multi-family accounts receiving a meter, offer audits to all institutional accounts receiving a meter, and promote audits to unmetered single- and multi-family customers. Incentives to achieve participation goal are not specified.	Incentives to achieve participation goal are not specified.	Sac Suburban will offer audits to all single- and multi-family and institutional customers beginning metered billing. Incentives to achieve participation goal are not specified.
2	Plumbing Retrofit of Existing Residential Accounts	Offer customers retrofit kits that include low flow showerheads, faucet aerators, toilet leak detection tablets, and water conservation materials and information.	PCWA will offer retrofit kits to customers with pre-1993 homes.	Sacramento will offer retrofit kits to at least 2% of residential accounts (10-year target = 20% of residential customers) and, where appropriate, install low-flow showerheads and faucet aerators.	Roseville will offer retrofit kits to customers with pre-1982 homes. Customers with 1982-92 homes will receive kits without showerheads.	Sac Suburban will provide low-flow showerheads, faucet aerators, and toilet leak detection tablets, as appropriate at time of audit.
3	Distribution System Water Audits, Leak Detection & Repair	Unmetered signatories: complete and maintain an annually updated system map, an identification of areas with >10% losses, and ongoing programs (meter calibration and replacement, leak detection and repair, complete system-wide leak detection). Metered signatories: complete and maintain an annual system water audit, an annually updated system map, ongoing programs (meter calibration and replacement, leak detection and repair, complete system-wide leak detection).	PCWA is fully metered.	Sacramento will have both unmetered and metered areas.	Roseville did not include two unmetered area provisions: (1) installation of devices or use of other methods designed to identify areas with greater than 10% losses, and (2) a complete system-wide leak detection program, repeated no less often than every 10 years, unless there are special circumstances.	Sac Suburban will implement a system-wide leak detection program when it is completely metered.
4	Residential Meter Retrofit	Implement gradually phased-in retrofit program. Purveyors will read all meters, include water usage on bills, and base water use charges on the quantity used. Program will occur in conjunction with BMP No. 11.	PCWA is fully metered and uses volumetric billing.	Going as far as possible within the limitations of its charter, Sacramento will implement a voluntary meter retrofit program. The goals of this program are: (1) complete 400 - 555 residential retrofits annually (Sacramento is currently contributing \$250,000/year for retrofits), (2) build public understanding and acceptance of alternative water savings programs through education and broad-based community outreach, and (3) provide opportunity for each retrofitted service to voluntarily convert to a metered billing via a comparison billing process. Incentives for participation may be considered.	It is recognized that CVPIA meter retrofit provisions are outside the scope of the WFA and that they require faster implementation than what is included in the WFA. On an annual basis, Roseville will retrofit at least 3.3 - 5% of the total number of unmetered residential connections as of the date of the WFA.	Sac Suburban proposes its meter retrofit program be evaluated over both the Northridge Service Area (NSA) and the Arcade Service Area (ASA). The NSA is ahead of schedule on program implementation, so the consolidated Sac Suburban will still exceed the rate of meter installation required by the WFA until such time that the ASA program is implemented. In the first 2 years after agreement signing, Sac Suburban would plan for, budget, and prepare the public for a residential meter retrofit program. Beginning no later than the start of the fourth year after agreement signing, Sac Suburban would annually retrofit at least 3.3-5% of the total number of unmetered residential connections as of the date of the WFA.
4	Non-Residential Meter Retrofit	Retrofit at least 85-90% of non-residential customers within ten years.	PCWA is fully metered and uses volumetric billing.	Sacramento will meter 100% of all unmetered non-residential customers within 5 years and consider installing separate landscape meters.	No change.	Sac Suburban will adopt a plan to meter 20% of unmetered non-residential accounts so that within 5 years of becoming a signatory, 85-90% of non-residential customers are metered.
5	Large Landscape Water Audits & Incentives for Commercial, Industrial, Institutional (CII), and Irrigation Accounts	Offer landscape water use reviews (audits), multi-lingual education materials, seasonal irrigation schedules, and incentives for program participation.	[AS OF 2000, NEGOTIATIONS FOR THIS BMP WERE NOT YET COMPLETE. -- UPDATE??]	Annually, Sacramento will provide audits to 12% of metered CII and irrigation accounts greater than 1 acre, provide audits to 33 schools and financial assistance to repair their irrigation systems, and spend \$30,000 on irrigation system improvements at each of five city parks (for 20 years).	Incentives to achieve participation goal are not specified.	Incentives to achieve participation goal are not specified.
6	Landscape Water Conservation Requirements for New and Existing Commercial, Industrial, Institutional, and Multi-Family Developments	Cities and counties have either adopted their own landscape water conservation ordinance or are covered by the state ordinance. In conjunction with purveyors in their jurisdiction, they will establish a landscape task force and review implementation of the ordinance.	PCWA will participate in the landscape task force.	Sacramento will participate in the landscape task force.	No change.	Sac Suburban will participate in the landscape task force.
7	Public Information	Provide customers with information about their water use, water efficiency practices and water conservation campaigns, and provide public speakers. Program will be: (1) a purveyor-specific program in conjunction with full participation in a regional program, (2) a purveyor-specific program in conjunction with limited participation in a regional program, or (3) an entirely purveyor-specific program.	PCWA's program will be purveyor-specific.	Sacramento's program will be purveyor-specific with limited participation in a regional program.	Roseville's program will be purveyor-specific with full participation in a regional program.	Sac Suburban's program will be purveyor-specific with full participation in a regional program.
8	School Education	Offer tours of facilities, provide informational and education materials about water use and conservation to schools; work with schools to promote audits, reduce water bills, and develop innovative funding for equipment upgrades. Program will be: (1) a purveyor-specific program in conjunction with full participation in a regional program, (2) a purveyor-specific program in conjunction with limited participation in a regional program, or (3) an entirely purveyor-specific program.	PCWA's program will be purveyor-specific.	Sacramento's program will be purveyor-specific with limited participation in a regional program.	Roseville's program will be purveyor-specific with full participation in a regional program.	Sac Suburban's program will be purveyor-specific with full participation in a regional program.
9	Commercial and Industrial (CI) Water Conservation	Provide commercial and industrial customers with water audits, assistance and incentives in implementing recommendations, and follow-up with customers about implementation of recommendations.	PCWA is fully metered. Incentives to achieve participation goal are not specified.	Sacramento will provide audits to all newly metered CI accounts. Incentives to achieve participation goal are not specified.	No incentives are offered to achieve participation goal.	Incentives to achieve participation goal are not specified.
11	Conservation Pricing for Metered Accounts	Purveyors will read all meters, include water usage on bills, and base water use charges on the quantity used. Program will occur in conjunction with BMP No. 4.	PCWA is fully metered and uses volumetric billing.	Within 3 years of agreement signing, Sacramento will: (1) identify all metered customers by account type, (2) establish quantity-based rates for each account type (except single- and multi-family accounts), (3) begin educating all customers about the quantity-based rate structure, and (4) provide metered customers with monthly or bi-monthly information (current flat-rate charges, actual water use, and what charges would be based on actual water use). Within 10 years of agreement signing, Sacramento will bill all metered customers using rates designed to recover the cost of providing service as well as on quantity of water used.	Within 4 years of agreement signing, Roseville will: (1) identify all metered customers by account type, (2) establish quantity-based rates for each account type (except single- and multi-family accounts), (3) begin educating all customers about the quantity-based rate structure. Within 6 years of agreement signing, Roseville will bill all metered customers using rates designed to recover costs of providing service as well as on quantity of water used.	No change.
12	Landscape Water Conservation for New/Existing Single-Family Homes	Provide information on climate appropriate landscaping through community events and education campaigns; work cooperatively with landscape industry to provide information about irrigation and landscaping.	PCWA is fully metered, will maintain the existing PCWA demonstration garden, and will participate in the landscape task force.	Sacramento will audit all single- and multi-family accounts that receive a meter and promote audits to umetered single- and multi-family customers. Sacramento will participate in the landscape task force.	No change.	Sac Suburban will actively market its landscape audit/water-use survey program to all single-family customers at the beginning of metered billing. Sac Suburban will participate in the landscape task force.
13	Water Waste Prohibition	Enact a water waste prohibition ordinance that includes measures and enforcement mechanisms.	PCWA will encourage the use of automatic shut-off nozzles on open hoses.	Sacramento did not include the provision for water waste patrols during the irrigation season.	Roseville did not include the provision for water waste patrols during the irrigation season.	Sac Suburban's waste prohibition enforcement mechanisms will be a graduated series of responses, including personal notification, monetary fees, and service termination.
14	Water Conservation Coordinator	Designate a staff person to be responsible for preparing, implementing and monitoring the supplier's Water Conservation Plan, and have on staff at least one trained certified water conservation practitioner.	No change.	No change.	No change.	If the program becomes industry standard, at least one Sac Suburban staff member or employee of its conservation program contractor will be an AWWA Certified Water Conservation Practitioner (Level II) or will pass equivalent training within 3 years of agreement signing.
16	Ultra-Low Flush Toilet Replacement Program for Residential Customers	VOLUNTARY - Establish residential toilet replacement programs. Program could be implemented in conjunction with any toilet replacement programs implemented by sanitation districts and/or in cooperation with community organizations.	No change.	Sacramento will annually provide a \$75 rebate voucher to each single- and multi-family unit that is audited.	N/A	N/A
16	Ultra-Low Flush Toilet Replacement Program for Non-Residential Customers	Provide incentives for replacement of non-residential toilets with non-ULF toilets. Program could be implemented in conjunction with any toilet replacement programs implemented by sanitation districts and/or in cooperation with community organizations.	PCWA will study the requirements to replace old high-use toilets with new ULF toilets when a property is sold (Board of Directors action required). PCWA will offer \$75 incentives for toilet retrofits, up to 100 per year, and will monitor the associated change in water use.	Sacramento will annually provide \$75 ULF rebate vouchers to newly metered non-residential accounts for each 3.5+ gpf toilet.	No change.	If a regional program is established, Sac Suburban's contractor will annually offer ULF rebates to all non-residential accounts that do not have ULF toilets, with special focus on those with the highest number of high-use non-ULF toilets.
--	Citizens Involvement Program	Establish citizens involvement programs such as citizen advisory committees to help design, implement, and market water conservation programs.	PCWA will establish a citizen involvement program after board approval of the WFA and the USBE water management plans. [UPDATE??]	Sacramento has two well-established neighborhood-based organizations that would be beneficial for community involvement in terms of public participation and consumer education (Neighborhood Association Advisory Group and Sacramento County Alliance of Neighborhoods). On an annual basis, Sacramento will continue to communicate with all 72 Neighborhood Associations and provide progress reports to the Sacramento City Council.	Roseville will establish a citizens advisory committee to assist in the development of the city's Water Conservation Plan. This committee will meet with the city's Environmental Utilities Department in several workshops to educate members on issues (e.g., plan to retrofit residences and businesses with water meters, transition from flat rates to metered rates for water service, proposed meter water rate structure).	Sac Suburban is investigating ways to implement this aspect of the WFA by using existing citizen groups (e.g., various County Planning Advisory Committees or CPACs) in its service area.